DOCUMENT RESUME

ED 047 334 CG 006 212

AUTHOR	Feldhusen, John F.; And Others
TITLE	Prediction of Social Adjustment Over an Eight Year Period.; Correlates and Long-Range Implications of Classroom Aggression.; Prediction of Academic Achievement of Children Who Display Aggressive-Disruptive Classroom Behavior.
INSTITUTION	Purdue Univ., Lafayette, Ind.; Wisconsin State Univ., Eau Claire.
SPONS AGENCY	National Inst. of Mental Health (DHEW), Bethesda, Md.
PUB DATE	Feb 71
NOTE	44p.; Paper presented at the American Educational Research Association Convention in New York, New York, February 4-7, 1971
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Academic Achievement, Adjustment (to Environment), Adjustment Problems, *Behavior Problems, *Delinquency, Delinquency Causes, Delinquency Prevention, *Delinquent Identification, *Elementary School Students, *Identification, Low Achievers, Maladjustment, Prediction, Problem Children, *Social Adjustment, Underachievers
IDENTIFIERS	Wisconsin

ABSTRACT

These papers focus on early identification, by classroom teachers, of children who, without planned intervention, are likely to eventually display poor social adjustment, low academic achievement and/or delinquency. The research indicates that there are valid predictors of these outcomes. Classroom teachers of selected elementary grades nominated, for study, aggressive/disruptive children and socially acceptable/productive children. Random samples were drawn. For all the studies, predictors and criteria are made explicit. Significant predictors were found for later social adjustment: (1) classroom behavior traits, (2) arithmetic achievement, (3) response to a sentence completion test, (4) a child's parents' marital relationship, and (5) maternal discipline. Significant factors were also found for academic achievement: (1) teacher ratings of social adjustment, (2) I.Q., (3) sex, (4) scores on a behavioral problems checklist, (5) parents' education level, and (6) classroom behavior. Both poor social adjustment and low academic achievement are correlated with aggressive/disruptive behavior and all three are correlated significantly with eventual delinquent behavior in the community. Early identification and individualized intervention are urged. Remediation and behavior modification are highly recommended. (TL)

ED047334

Correlates and Long-Range Implications of Classroom Aggression

John R. Thurston
Wisconsin State University-Eau Claire

John F. Feldhusen
Purdue University

James J. Benning
Wisconsin State University-Eau Claire

CG 006 212

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

This investigation was supported by Public Health Service Grant No. RO1 MH17641-02 from the National Institute of Mental Health and sponsored by the Division of Family Services, Wisconsin Department of Health and Social Services.

A paper presented at a symposium entitled "Assessment and Management of Aggressive and Disruptive Children in the Classroom", National Council on Measurement in Education, New York, New York, February, 1971.

The aggressive-disruptive child constitutes a serious problem for his teachers, his peers, and himself in the classroom. His behavior may often make it impossible for his teacher to carry out planned learning activities. Consequent difficulties with the class added to those associated with the aggressive-disruptive child may be severely frustrating and disturb her emotionally. The classmates may be affected in several ways: their learning of basic skills may be impaired; their social learning may be disrupted; and they may suffer considerable anxiety as a result of being passive participants in the aggressive or disruptive classroom episodes. But, the immediate and long-range effects of the aggressive-disruptive child's behavior on himself are perhaps the most serious. He, too, will suffer the disadvantages which his peers suffer, but more intensely. Also, it seems likely that patterns of aggressive behavior, first revealed in school, may change in form and direction and manifest themselves later in delinquency and crime.

In The Challenge of Crime in a Free Society, the President's Commission on Law Enforcement and Administration of Justice (1967) recognized the serious problem of the aggressive-disruptive child's relationship with the school and suggested that the school was not only unable to cope with the problem, but was probably even augmenting it (p. 69).

In Juvenile Delinquency and Youth Crime, the Task Force on Juvenile Delinquency (1967) while specifically acknowledging the predictive relationship between persistent school misconduct and delinquency also suggested that this is so in part because of the ineffective ways schools handle children who misbehave (p. 233).

Reviews of the research on delinquency and aggressive classroom behavior by Quay (1965), Kvaraceus (1966), Balow (1966), and the National Society for The

Study of Education (1966) indicate that children who are persistently aggressive and disruptive in school are lower in intelligence, lower in basic scholastic achievements, and have more contacts with law enforcement agencies than children whose behavior is not aggressive and disruptive.

Phases I, II, and III of the Eau Claire County Youth Study obtained results which corroborated these findings and extended the observations to several other important areas in the lives of the youngsters and their parents (Thurston, Feldhusen, and Benning, 1964; Feldhusen, Thurston, and Benning, 1965; Benning, Feldhusen, and Thurston, 1968).

In the first years of this investigation, all 3rd, 6th, and 9th grade teachers in Eau Claire County, Wisconsin, were asked to nominate children in their classes whose behavior was persistently aggressive and disruptive and children whose behavior was persistently socially acceptable and productive. In all, 1550 children were nominated, 568 as aggressive-disruptive and 982 as displaying socially acceptable and productive behavior. These teachers were also asked to check on a list of misbehaviors those which they had observed in each child nominated. This yielded two scores, one for high aggressive misbehaviors and one for low aggressive behaviors. The overall instrument was called The Behavior Problems Checklist.

From each group of nominees, 192 were drawn randomly - but with equal representation by sex, grade, and home location as urban or rural - for intensive study by trained social workers and psychologists who interviewed the parents and the youngsters and administered a battery of tests to the youngsters. Three psychological tests - the Kvaraceus Delinquency Proneness Scale (KD); a set of story frustration exercises similar to the Rosenzweig Picture Frustration Study; and a special sentence completion form were administered to each child individually.

Each family was rated using the Glueck social factors (and other family interaction items derived from the Flint Youth Study, 1959). Data on academic achievement, intelligence, and personal-social adjustment were secured from school records.

These interviews and tests revealed that the aggressive-disruptive youngsters, as compared with youngsters whose behavior was persistently socially acceptable, were much more delinquency prone; their parents were less effective in supervising, disciplining, in providing affection, and in maintaining family cohesiveness; their intelligence and school achievements as reflected in teacher grades and standardized tests were much lower; their parents were far lower in levels of education and occupation; and their parents responded to many aspects of the community, neighborhood, and school in more negative ways.

During Phases II (1964-1965) and III (1965-1968) further data were secured on the children concerning their contacts with law enforcement and welfare agencies; achievement, behavior and adjustment in school; and health departments. An effort was also made in Phase III to develop a remedial instruction program as a means of alleviating behavior and underachievement problems of a new group of children who were identified in the same way as the original sample of aggressive-disruptive children.

In the current Phase IV investigation, eight years after the original nominations, further information was gathered on all 1550 of the children who were nominated in 1961 and 1962 concerning their school achievements, their social adjustment, their classroom behavior if they were still in school, and their contacts with law enforcement agencies. Specifically answers were sought for the following questions: eight years after their original nomination as aggressive-disruptive or socially approved, are there significant differences between these

groups of youngsters in basic academic achievements, social adjustment, classroom behavior, and in contacts with law enforcement agencies and health and welfare agencies? Can predictive factors be determined and utilized for the early identification of individuals likely to experience difficulty in these areas?

For the original 3rd and 6th graders, who are now in 12th grade or have been graduated, teacher grades were obtained for English, science, mathematics, and social studies and STEP scores for reading, writing, social studies, science, and mathematics. For the original 6th and 9th graders, all of whom are now out of school, rank in graduating class was obtained. A behavior trait rating from was completed by current teachers of the 12th graders. Social adjustment ratings on eight aspects of behavior by current teachers were available from school records for 12th graders and the graduates. Police and sheriff departments supplied data concerning frequency of recorded contacts for all youngsters in the original study.

In analyzing the data on the variables two different samples were available and two complete analyses were run, the second as a cross-validation of the first analysis. The 384 children who had been studied intensively in Phases I, II, and III and for whom longitudinal data was obtained, served as one source of sample for the longitudinal analyses. The 1166 children who had been nominated but not studied intensively in Phases I, II, and III but for whom longitudinal data were obtained, became a second source of sample. Thus, samples were drawn from each of these two pools of Ss for each analysis.

The analyses of teacher grades, STEP scores, and rank in graduating class were first run as analyses of covariance with IQ as the covariate. The results obtained from the data from both of these achievement areas yielded F ratios for the main effect of behavior, which were, without exception, significant at

the .01 level. Analysis of rank in graduating class (the raw rank scores had been normalized by conversion to arcsin equivalents) of original 9th graders who were now out of school also gave F ratios significant at the .01 level. In all cases the mean achievement scores of the aggressive-disruptive children were significantly lower than the achievement of children whose behavior had been socially approved when they were first identified.

Further analysis of the achievement data has been carried out as regression analyses with data gathered in Phases I, II, and III serving as potential predictors of Phase IV achievement indices. These analyses have generally yielded multiple correlations of .70 to .80 indicating that 50 to 60 percent of the variance is being accounted for. Furthermore, the best predictors over the eight year period were IQ, The Behavior Problems Checklist scores, reading and arithmetic achievement levels, a social adjustment rating, and the education levels of the mother and father.

Of all eight of the social adjustment ratings the F ratios for behavior were significant at the .01 level; and all the means for aggressive-disruptive children were lower than the means for their socially acceptable peers. Regression analyses were also carried out with the social adjustment scores as criteria to be predicted. These analyses yielded multiple correlations of .76 and .78 and the best predictors were The Behavior Problems Checklist score, IQ, arithmetic achievement level, and a prior assessment of social adjustment. Finally, contacts with police and sheriff departments were much more frequent for the original aggressive-disruptive nominees.

This research has thus found that aggressive classroom behavior, poor academic achievement, unsatisfactory personal and social adjustment, and delinquent behavior in the community are correlated with complex psycho-social

predispositions of the youngster in interaction with precipitating circumstances in his environment. A basis for predicting his behaviors has also been established. Any effort to understand his difficulties, to predict subsequent behaviors, or to provide preventive therapy must take into account manifold factors in him, his home, neighborhood, school, and community.

On the basis of this research findings, it is believed that it is possible and advantageous to secure appropriate information about the child and his family in the early grades and to use this information in developing delinquency prediction formulae. While we have achieved acceptable levels of reliability of prediction in our samples and while our formulae may have general applicability, we feel, nevertheless, that prediction systems should be developed for each locality to assure greater predictive accuracy. Rosenberg and Silverstein argue in their new book, The Varieties of Delinquent Experience (1969), that delinquency behavior patterns in child and family are intimately related to the social context in which they emerge. Thus, the behavior differs from community to community, its antecedents may differ, and different prediction systems may be needed. Different prediction systems means that different predictor variables or the same predictors in differing degrees may be operative in different settings, that their interrelationships in prediction equations may vary, and that even the criteria may vary from community to community.

The pool of predictors which have proven to be of value in the present research should be considered by other researchers who are attempting to develop prediction systems. The teacher's initial nomination of the child as aggressive-disruptive, the scores for high and low aggressive traits are The Behavior Problems Checklist, and IQ, taken from school records, are easily obtained, effective long range predictors. In addition to using the Glueck Scales total

score as a predictor, the five component scores from which it is derived may prove diagnostically useful. The components are father and mother's discipline methods as firm, lax, or overly strict, father and mother's affections for the child as warm or indifferent, and cohesiveness of the family.

Several other ratings by the interviewers may also be worthwhile. These include ratings of the closeness of the husband-wife relationship of the parents, the degree of communication between the parents about the child, the mother's and father's degree of approval of the child, and the activity level of the child during the interview. Assessments of the mother's and father's education and occupation levels are also predictors. Other ratings by the interviewers which were significant predictors include the parents' reactions to various community resources and the parents' methods of child rearing.

Total and component scores on the Kvaraceus Delinquency Proneness Scale were not very useful predictors. However, two other scales, developed especially for the Eau Claire County Youth Study, have proven to be useful predictors. They are a twenty item sentence completion scale and a four item frustration story completion instrument called the stiuation exercises. The latter call for reactions of the child to a social rebuff, being falsely accused of cheating, being scolded for an unavoidable error, and not being allowed to make a clothing purchase.

Reading and arithmetic achievement scores based on standardized tests and obtained from school records are also useful long-range predictors. While we have made less use of them, it appears that teacher grades possess sufficient reliability to serve as well as long range predictors.

Turning from predictors to criteria we are inclined to use multiple criteria which afford as broad a view of the person as possible and to secure the criteria as unobtrusively as possible (Webb, Campbell, Schwartz and Sechrest, 1966). Our criteria, in addition to the delinquency criteria based on police and sheriff department records have included social adjustment ratings by teachers; several types of achievement indices such as standardized achievement test scores, rank in graduating class, and teacher grades; teacher ratings of current classroom behavior; and contacts with health and welfare departments and juvenile court.

A single criterion leads to a myopic and narrow view of the individual. Multiple criteria afford an opportunity to see the individual in some of his complexity and to see interrelationships among many facets of his behavior and personality. However, multiple predictors, multiple criteria, and long-range prediction all add up to new methodological, statistical, and conceptual problems far more complicated than those encountered in univariate research.

To raise some additional basic questions now seems appropriate. How are these results to be implemented in the form of effective programs which might make an appreciable dent in the enormous problems posed by and to our adolescents and young adults? Children can be identified at an early age as likely to experience subsequent, serious difficulty in school and in the community. Psychological, sociological, and educational correlates of the predispositions to encounter trouble provide a basis for understanding and helping them offset these tendencies. Who or what agencies should assume responsibility for carrying forward a prediction-prevention-remediation program based on the knowledge derived from this and other researches? The school seems the institution that could most reasonably be expected to assume leadership in this area. It has the longest, most sustained contact with nearly all children of any social agency. Its role

has often been defined as including concern for the mental health and community adjustment of the child. Most teachers have some training in psychology, and the counseling and guidance staff are supposed to concern themselves with such matters. However, it has been reported that the school, far from being a potential source of help to the delinquency prone youngster, joins with the neighborhood and family as contributors to his problems (Task Force on Delinquency, 1967). Irrelevant instruction, inappropriate teaching methods, frustrating discipline and control techniques, modeling aggression in teacher behavior, bad grouping practices, poor remedial instruction and failure to provide success experiences are some of the general ways in which the school can augment these difficulties. It would be an enormous undertaking for the schools to initiate early comprehensive preventive programs based on the complexity and uniqueness of the individual child's problems. Yet, the responsibility for such efforts seems to fall most clearly and naturally upon the schools and the teachers. Individualizing helping programs would require extensive use of many professionals (teachers, psychologists, social workers) and non-professionals (teacher aides, other students, etc). There is no question that such efforts would be expensive and would require much in the form of flexibility and innovation in coming up with comprehensive programs actively involving the family, community, school, as well as the child.

Identifying the problem areas for each child and prescribing the helping program is indeed costly, comprehensive, and complex. Such an individualized approach offers hope for the success that seems clearly denied us if we are to rely upon traditional ways of proceeding.

References

1. Balow, B. "The emotionally and socially handicapped." Review of Educational Research, 1966, 36, 120-133.
2. Benning, J.J., Feldhusen, J.F., and Thurston, J.R. Delinquency prone youth - longitudinal and preventive research. Madison, Wisconsin: Wisconsin Department of Health and Social Services, 1968, 199 pages.
3. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. Delinquency proneness and classroom behavior. Madison, Wisconsin: State Department of Public Welfare, 1965, 236 pages.
4. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. "Classroom behavior, intelligence and achievement." The Journal of Experimental Education, 36, No. 2, 1967, p. 82-87.
5. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. "Longitudinal analyses of classroom behavior and school achievement." The Journal of Experimental Education, 38, No. 4, 1970, 4-10.
6. Flint Youth Study. Program on Children, Youth, and Family. Institute for Social Research, University of Michigan, 1959.
7. Kvaraceus, W.C. Dynamics of delinquency. Columbus, Ohio: Charles E. Merrill, 1966.
8. National Society for The Study of Education. Social deviancy among youth, The 65th Yearbook, Part 1. Chicago, Illinois: University of Chicago Press, 1966.
9. President's Commission of Law Enforcement and Administration of Justice. The challenge of crime in a free society. Washington, D.C.: U.S. Government Printing Office, 1967.
10. Quay, H.C. Juvenile delinquency. New York: D. Van Nostrand, 1965.
11. Rosenberg, B. and Silverstein, H. The varieties of delinquent experience. Waltham, Massachusetts: Blaisdell, 1969.

12. Task Force on Juvenile Delinquency. Juvenile delinquency and youth crime. Washington, D.C.: U.S. Government Printing Office, 1967.

13. Thurston, J.R., Feldhusen, J.F., and Benning, J.J. Classroom Behavior: Background factors and psycho-social correlates. Madison, Wisconsin: State Department of Public Welfare, 1964, 471 pages.

14. Webb, E.J., Campbell, D.T., Schwartz, R.D., and Sechrest, L. Unobtrusive measures: Nonreactive research in the social sciences. Chicago: Rand McNally, 1966.

ED047334

Prediction of Social Adjustment Over An Eight Year Period

John R. Thurston and James J. Benning
Wisconsin State University-Eau Claire

John F. Feldhusen
Purdue University

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

CG006212

This investigation was supported by Public Health Service Grant No. RO1 MH17641-02 from the National Institute of Mental Health and sponsored by the Division of Family Services, Wisconsin Department of Health and Social Services.

This paper was presented at the annual meeting of the American Educational Research Association, Division E, New York City, February, 1971.

Studies of the personality and adjustment of the delinquent are far less conclusive than the studies involving the relationship between delinquent and aggressive behavior. Some researchers have attempted to describe personality types or broad diagnostic categories which would correlate with delinquent behavior patterns (Quay, 1965, and Wirt and Briggs, 1965). Others have attempted to identify particular dimensions of personality or adjustment on which the delinquent might be found to be deviant. Quay (1965) reviewed research on the relation of adjustment and personality to delinquency and concluded that some aspects of personality difficulties in youngsters are associated with the later development of delinquency. Quay (1965) also reported a study in which he found higher levels of behavior maladjustment (psychopathy, neuroticism, emotional disturbance, and immaturity) in adjudicated delinquents than in normal youngsters.

Wattenberg (1966) discussed the problem of the common occurrence of personality adjustment disorders and social deviancy. He suggested that it would be most productive to define the deviant behavior of the delinquent or pre-delinquent essentially in terms of deviation from societal norms. He indicated that personality and adjustment concepts should be emphasized in the study of delinquency.

In line with Wattenberg's thinking, Kvaraceus (National Education Association, 1959) estimated that no more than 25 per cent of delinquents suffer from personal or emotional adjustment problems. He concluded (p. 55) that "... the preponderant portion of our delinquent population consists of essentially normal ... youngsters." This, of course, does not suggest that there is no relationship between delinquency and adjustment. However, he does indicate that there may be relatively few - perhaps no more than one in

four - delinquents who can profit from traditional mental health services. He also noted that in the total groups of low and middle class delinquents, the proportion of emotionally disturbed youngsters will be relatively high in the middle class and extremely low in the lower class.

Kvaraceus suggested that the behavior of most delinquent youngsters is actually adjustive and socially acceptable in their culture. Thus, this behavior comes to be viewed as maladjusted purely from an outside point of view. Elsewhere, Kvaraceus suggested (1966) that "maladjusted" delinquents, while only a small number, receive a disapportionately large share of the attention of social and psychological agencies. In many cases, he felt that psychological counseling might even be irrelevant and inappropriate (National Education Association, 1959).

From the opposite point of view, several researchers suggest that maladjustment is predictive of delinquency. Stott (1960) suggested that social adjustment, as assessed at the elementary grade level, can be used to predict delinquency. He developed that Bristol Social Adjustment Guide and offered evidence that the scale was useful in delinquency prediction for boys. It should also be noted that many items in Kvaraceus' KD Check List reflect adjustment.

MacIver (1966) suggested that delinquent youngsters have frequently experienced severe frustration and failures which give rise to maladjustment and delinquency. He indicated that many of these frustrations may arise from the thwarting of youthful aspirations by societal restraints, particularly in the family and in school.

It has been shown that teachers can make reliable identifications of children whose classroom behavior is persistently anti-social, aggressive, and disruptive (Scarpetti, 1964). There is also considerable evidence that

such behavior in the early grades points toward the emergence of later more serious anti-social behavior and maladjustment (Thurston, Feldhusen, and Benning, 1964; Feldhusen, Thurston, and Benning, 1965; Benning, Feldhusen, and Thurston, 1968). If these findings are substantiated through further research, then the teacher may be viewed as an early predictor of later social maladjustment, delinquency, or adult crime. The possibilities of effective intervention to offset these developments is enhanced with early identification (Glueck and Glueck, 1959).

The objectives of this inquiry were: 1) to identify long range correlates or predictors of social adjustment and 2) to determine the multiple correlation between a best set of these correlates or predictors and the social adjustment of children after eight years had elapsed. The subjects were children who were first evaluated in third or sixth grade and for whom social adjustment was assessed eight years later. The specific questions asked in this research were stated as follows: What are the predictors of social adjustment over an eight year period for children first identified in grades three or six? What is the multiple correlation between a best set of predictors and the social adjustment criterion?

Methods and Data Sources. A special nomination instrument was submitted to all the teachers of grades three and six throughout an entire county in Wisconsin. Each teacher was asked to nominate the two boys and two girls in his class whose behavior was most disapproved, aggressive or disruptive and the two boys and two girls whose behavior was most socially approved. The teacher was also required to check on a list of eighteen aggressive and disruptive behaviors, those which were displayed habitually or persistently in school by each child he

nominated. Nine of these behaviors were designated as "high aggressive" (defiant, destructive, disrupts class, is a bully, has temper tantrums, overly dominant, talks back, cruel, fights with other pupils) and nine are "low aggressive" (sullen, quarrelsome, rude, resentful, steals, lies, tardy or absent without excuse, profanity or obscenity, deceptive). This list was based, in part, on characteristics used by Kough and DeHaan (1955) in the identification of children with aggressive maladjustment. Short-term (the same teacher one month later) and long-term (a new teacher the next year) reliabilities of the nomination procedures were assessed and found acceptable.

A total of 710 youngsters was nominated as displaying socially approved behavior and 399 as displaying anti-social, aggressive or disruptive behavior. From this pool of 1109 youngsters, a sample of 256 was drawn randomly for intensive study during the period of 1961 and 1962. They were selected so as to insure equal representation according to classroom behavior as approved or disapproved; grade level as three or six; home location as urban or rural; and sex. Each of the youngsters and his or her parents were interviewed and tested by a trained social worker or psychologist. Three psychological tests - the Kvaraceus Delinquency Proneness Scale (KD Scale, 1950); a set of story frustration exercises similar to the Rosenzweig Picture Frustration Study; and a special sentence completion form - were administered to each child individually. Each family was rated using the Glueck social factors and other family interaction items derived from the Flint Youth Study (1959). Data on academic achievement, intelligence, and personal-social adjustment were secured from school records. For children who were nominated but not studied intensively, ten items of background information were secured from school records. Additional predictor data were gathered after the original nomination

and assessment but before the criterion assessment in the present research. The list of variables from which significant predictors were derived is as follows:

1. Behavior;
2. Kvaraceus Delinquency Scale Score;
3. Glueck Delinquency Proneness Scores;
4. IQ;
5. Reading Achievement Level;
6. Arithmetic Achievement Level;
7. High Aggressive Traits;
8. Low Aggressive Traits;
9. A Social Adjustment Rating by Teachers;
10. Interviewer Ratings of the
    father-mother relationship,
    parental communication, and
    parents approval of the child;
11. Situation Exercises Involving
    reactions to being accused of cheating,
    reactions to being scolded for unavoidable failure,
    reactions to a social rebuff, and
    reactions to thwarted assertions of independence;
12. Sentence Completion Adjustment Score; and
13. Interviewer assessment of the mother's method of controlling the child.

Variables numbered 1, 4, 7, 8, and 9 were the only ones available for the nominee sample.

The criterion to be predicted was a composite social adjustment rating by teachers based on the following six characteristics (items on the rating scale): 1) initiative, 2) leadership, 3) personal adjustment, 4) responsibility, 5) courtesy, and 6) integrity.

Regression analyses were carried out with a step-wise build-up program. Complete predictor and criterion data were available for 126 of the children

who had been studied intensively in 1961 and 1962 (hereafter called "intensives") and 410 of those who had been nominated but not studied intensively (hereafter called "nominees"). Table 1 gives further descriptive information on the samples regarding sex, behavior, grade level, and home location. Predictor variables for the intensive and the nominee samples will be identified in the results section. Alpha was set at .05 for significance tests.

Results. The significant predictors of social adjustment criterion were those variables which had an F value of .05 or better to enter in the build-up program. The results are presented in Table 2. For intensives the significant predictors and their correlations with the criterion were: low aggressive traits, -.55; the sentence completion score, -.13; arithmetic, .52; a social adjustment score obtained in Phase III of the study, 3 years prior to the criterion, .64; husband and wife relationship of parents, .24; and the mother's method of controlling the child, .30. For nominees the predictors were behavior, -.47; IQ, .54; high aggressive traits, -.35, and the Phase IV social adjustment score, .74. While behavior, IQ, and high aggressive traits were not significant predictors in the regression analysis for intensives, the simple correlations of each of these variables, shown in Table 2, are all high and significant as was low aggressive traits for nominees. The failure of these variables to appear in the significant set in the regression analysis indicates simply that their variance was subsumed by other predictors. Their similarity in magnitude in both samples indicates nevertheless that they are individually quite good predictors. For the intensives, the multiple correlation for the six best predictors yielded an R of .76. For the nominees it was .78 for four best predictors.

Discussion. This research leads tentatively to these conclusions: 1) The multiple Rs obtained in this study, if cross-validated in further research, indicate that reliable long-range predictions of social adjustment may be possible; 2) Knowledge of the nature of the correlates or predictors should be useful both in building useful prediction systems and in creating programs designed to prevent the development of maladaptive behavior.

It should be noted as a caution in interpreting the multiple correlations in this research that for the sample of intensives the number of variables in the initial battery of independent variables from which the significant predictors were drawn in the build-up to the optimum set was high in relation to the sample size. The multiple R capitalizes upon chance deviations. Thus, the R is probably an inflated value even though the shrinkage formula was used to correct it.

As might be expected, the social adjustment score from Phase III of the Youth Study, gathered three years prior to the criterion assessment of social adjustment, was the best predictor in both samples. But several other variables, assessed eight years before the criterion were also strong predictors. In this research it was found that the significant predictors were usually measures which could be obtained rather easily. The teacher descriptions of aggressive behavior traits and social adjustment can be obtained for an entire class with a minimum of time and effort. Intelligence and arithmetic test scores are usually available in the cumulate record for all students. The sentence completion test can be administered to an entire class in less than thirty minutes. And while scoring this test requires special training, the acquisition of these skills is within the capability of most teachers

(Feldhusen, Thurston, and Benning, 1966). Similarly the evaluation of the husband and wife relationship and the method of discipline used by the mother would require special training but they could be done by teachers.

In addition to the advantages of simplicity and ease of acquisition, these measures could provide a basis not only for prediction but for an early understanding of the bases of a child's adjustment problems and as a guide to the most appropriate form of therapy. For example, knowledge of how threat and physical punishment have been used as control measures for a child would provide an astute teacher with insights on how he should proceed in his discipline of a child behaving aggressively in his classroom. Inspection of the child's sentence completions could add further to this understanding. Underachievement in arithmetic by a child would almost immediately suggest the need for remediation. The nature of the mother and father relationship might require attention that is beyond the scope and capacity of the classroom teacher. Referral to appropriate mental health or social agency might then be in order. In any event, if the teacher is aware that the problems of classroom aggression have long range and negative implications far beyond the confines of the current classroom, he might be more inclined to intervene actively and assume responsibility for the early resolution of the problems the child presents.

Summary. On the basis of eight years longitudinal research involving 536 children who were originally studied as third and sixth graders, predictors of later social adjustment were identified. A multiple correlation of a best set of these predictors was determined. Significant predictors included classroom behavior traits, arithmetic achievement level, response to a sentence completion test, judgments regarding the nature of husband and wife relationships of the child's parents, and the manner of maternal discipline. These findings and procedures were discussed in terms of early identification and treatment of children likely to experience subsequent social maladjustment.

References

1. Benning, J.J., Feldhusen, J.F., and Thurston, J.R., Delinquency prone youth: longitudinal and preventive research. Madison, Wisconsin: Wisconsin Department of Health and Social Services, 1968, 199 pages.
2. Feldhusen, J.F., Thurston, J.R., and Benning, J.J., Delinquency proneness and classroom behavior. Madison, Wisconsin: State Department of Public Welfare, 1965, 236 pages.
3. Feldhusen, J.F., Thurston, J.R., and Benning, J.J., "Sentence completion responses and classroom social behavior," Personnel and Guidance Journal, October, 1966.
4. Flint Youth Study. Program on Children, Youth, and Family. Institute for Social Research, University of Michigan, 1959.
5. Glueck, S. and Glueck, E., Predicting delinquency and crime. Cambridge, Massachusetts: Harvard University Press, 1959.
6. Kough, Jack and DeHaan, R.F., Identifying children with special needs. Chicago: Science Research Associates, 1955.
7. Kvaraceus, W.C., The KD proneness scale and checklist. New York: Harcourt, Brace and World, 1950.
8. Kvaraceus, W.C., Dynamics of delinquency. Columbus, Ohio: Charles E. Merrill, 1966.
9. MacIver, R.M., The prevention and control of delinquency. New York: Atherton Press, 1966.
10. Quay, H.C., "Personality and delinquency," in H.C. Quay (Ed.) Juvenile delinquency. New York: D. VanNostrand, 1965, 139-169.

11. Scarpetti, F.R., "Can teachers predict delinquency?" Elementary School Journal, LXV #3, December 1964.

12. Stott, D.H., "A new delinquency prediction instrument using behavioral indications," International Journal of Social Psychiatry, 1960, 5, 195-205.

13. Thurston, J.R., Feldhusen, J.F., and Benning, J.J., Classroom behavior: background factors and psycho-social correlates. Madison, Wisconsin: Wisconsin Department of Public Welfare, 1964, 471 pages.

14. Wattenberg, W.W., "Review of trends". In N.S.S.E. Social deviancy among youth, The 65th Yearbook, Part I, Chicago: University of Chicago Press, 1966, 4-27.

15. Wirt, R.D. and Briggs, P.F., "The meaning of delinquency". In H.C. Quay (Ed.) Juvenile delinquency. New York: D. VanNostrand, 1965, 1-26.

Table 1

Description of Samples for
Predicting Social Adjustment

Characteristic		Nominees N=410	Intensives N=126
Grade 3		151	73
6		259	53
Sex	Males	210	64
	Females	200	62
Approved		297	59
Disapproved		113	67
Rural		212	39
Urban		198	87

Table 2

Significant Predictors of Social Adjustment

	Variable	Correlation with Y Social Adjustment	
		Nominees	Intensives
1	Behavior (Approved or Disapproved)	-.47**	-.51
2	IQ	.54**	.46
3	High Aggressive Traits	-.35**	-.49
4	Low Aggressive Traits	-.39	-.55**
5	Sentence Completion	*	-.13**
6	Arithmetic Score	*	.52**
7	Social Adjustment Score (Phase III)	.74**	.64**
8	Husband and Wife Relationship (Close, equal vs. other options)	*	.24**
9	Mother's Method of Controlling Child (Physical, threatening vs. reasoning, praise, no problems requiring intervention)	*	.30**
	Mean of Y	40.28	39.21
	Multiple Correlation	0.73	0.76
	Standard Error of Estimate	5.51	6.11

* These scores were not available for nominees.

** These variables were included in the optimum sets.

ED047334

Prediction of Academic Achievement of Children Who Display Aggressive-Disruptive Classroom Behavior

John F. Feldhusen
Purdue University

John R. Thurston
Wisconsin State University-Eau Claire

James J. Benning
Wisconsin State University-Eau Claire

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

CG006212

This investigation was supported by Public Health Research Grant No. RO1 MH 17641-02 from the National Institute of Mental Health and sponsored by the Division of Family Services, Wisconsin Department of Health and Social Services.

A paper presented at the annual meeting of the American Educational Research Association, New York City, February, 1971.

A major problem facing teachers in the public school is the aggressive, disruptive, or defiant student. While many critics of public education argue that such students are responding appropriately to the frustrations imposed on them by the school, it seems that much of this behavior cannot be accounted for in this way. It seems likely that the aggressive behavior of many youngsters represents well established behavior patterns which may have developed as a result of prolonged frustration (Miller et. al., 1948), exposure to aggressive models (Bandura and Walters, 1959) or external circumstances which have reinforced previous aggressive behavior (Skinner, 1967).

The teacher's principal task is to facilitate learning by the children in his classroom. Order or organization is required if learning is to result. Some of the new curricular approaches which emphasize high level cognitive activity require a high level of concentration on the part of students and teachers. Aggressive, disruptive and defiant behavior, whatever their causes, are anathema to such educational enterprises.

In addition to their effect on the classroom situation and activities, the aggressive or disruptive students also constitute major problems to themselves. Inasmuch as academic achievement is of great importance to these and other students, it is reasonable to ask if their behavior interferes with their ability to achieve the objectives of the curriculum. This question is the major concern of this paper.

The determiners and/or correlates of academic achievement are undoubtedly complex. It is well established that cognitive aptitudes and prior academic achievements are significantly related to later academic achievements. However, correlates of achievement are probably found in

many other non-academic areas as well. That is to say such other factors as parental child-rearing practices, socio-economic status, and personal and social factors probably exert influence on a child's academic achievements. Thus, in the present research a battery of predictors drawn from various areas of cognitive functioning, personal and social characteristics, and family interaction were evaluated in relation to the academic achievement, assessed eight years after initial identification and evaluation of the sample. The criteria of academic achievement were scores from standardized achievement tests in the following areas: reading, social studies, science, and mathematics.

Objectives: The specific objectives of this research were: 1) to identify correlates or predictors of academic achievement, and 2) to determine the multiple correlation of these predictors with achievement for children who were first identified in third and sixth grade as displaying persistent aggressive-disruptive or persistent socially approved behavior and for whom scholastic achievement assessments were made eight years later.

Methods and Data Sources

A special nomination instrument was submitted to all the teachers of grades three and six throughout an entire county in Wisconsin. Each teacher was asked to identify the two boys and two girls in his class whose classroom behavior was most aggressive-disruptive and the two boys and two girls whose behavior was most socially approved. The teacher was also required to check on a list of eighteen aggressive and disruptive anti-social behaviors those which were displayed habitually or persistently in school by each child he nominated. This list included nine behaviors considered to

be low aggressive in character (e.g., sullen, resentful, and deceptive) and nine which were high aggressive (e.g., defiant, destructive, and cruel). Short-term (the same teacher one month later) and long-term (a new teacher the next year) reliabilities of the nomination procedures were assessed and found acceptable.

A total of 710 youngsters was nominated as displaying socially approved behavior and 399 as displaying anti-social, aggressive or disruptive behavior. From this pool of 1109 youngsters, a sample of 256 was drawn for intensive study during the period of 1961 and 1962. They were selected so as to insure equal representation according to classroom behavior (aggressive-disruptive or socially approved); grade level as three or six; home location as urban or rural; and sex. Each of the youngsters and their parents were interviewed by a trained social worker or psychologist; and three psychological tests - the Kvaraceus Delinquency Proneness Scale; a set of story frustration exercises similar to the Rosenzweig Picture Frustration Study (Rosenzweig, 1960); and a specially constructed sentence completion form (Feldhusen, Thurston, and Benning, 1964) - were administered to each child individually. Each family was rated for the pattern of interaction using the Glueck social factors (Glueck and Glueck, 1959) and other ratings derived from the Flint Youth Study (Flint Youth Study, 1959). Data on academic achievement, intelligence, and social adjustment were secured from school records. For children who were nominated but not studied intensively, ten items of background information were secured from school records. Additional predictor data were gathered in later years after the original nomination and assessment but before the criterion assessment in the present research. The list of predictors is given in Table 1.

The criteria to be predicted were scores from standardized achievement tests, administered by the schools eight years after the original assessments, for the following: reading, social studies, science, and mathematics. The most commonly used tests were STEP, ITED, and the SRA's Achievement Series. Percentile scores with arcsin transformation were used as the criterion measures.

Regression analyses were carried out with a step-wise build-up program (Draper and Smith, 1966). Complete predictor and criterion data were available for 175 of the children who had been studied intensively (hereafter called "intensives") and 468 of those who had been nominated but not studied intensively (hereafter called "nominees"). Table 2 contains information on the two samples regarding the distribution by sex, grade, behavior, and home location. Significant predictor variables for each group will be identified in the results section. Alpha was set at .05 for significance tests. All of the multiple Rs were shrunken using a formula suggested by Guilford (1965).

Results

The significant predictors of the achievement criteria and their correlations with the criteria are given in Table 3 and the results of the regression analyses are given in Table 4.

For the sample of intensives the optimum multiple correlation of the predictors with the criterion achievements were as follows: reading, .77; social studies, .68; science, .66; and mathematics, .70. The significant predictors for reading were as follows: sex, IQ, the KD area score for attitudes toward school, reading achievement level, social adjustment, and the mother's education level. For social studies the

predictors were: the KD Total score, reading achievement level, social adjustment, parental communication, and the father's education level. For science the predictors were: sex, the KD Total score, the second situation exercise (reactions to thwarting), arithmetic achievement level, low aggressive traits, and social adjustment. For mathematics the predictors were: sex, IQ, the KD area score for occupations, arithmetic achievement level, social adjustment, and the father's approval of the child.

For the nominee sample the optimum multiple correlations were as follows: reading, .73; social studies, .71; science, .69; and mathematics, .72. For reading the predictors were behavior status, IQ, and social adjustment. For social studies they were: sex, IQ, low aggressive traits, age, and social adjustment. For science: sex, behavior, IQ, and social adjustment. For mathematics: sex, IQ, low aggressive traits, and social adjustment.

Discussion

It seems safe to conclude from the results of this research that academic achievement can be predicted moderately well over an eight-year period. Approximately 40 to 50 percent of the criterion variance is accounted for. Since the reliability of the predictors and the criteria is well below 1.00, this reduces the potential for identification of the complete true common variance. More reliable instruments would probably yield multiple correlations somewhat higher so that a larger percentage of the variance would be accounted for.

It should be noted as a caution in interpreting the multiple correlations in this research that for the sample of intensives the number of variables

in the initial battery of independent variables from which the significant predictors were drawn in the build-up to the optimum set was high in relation to the sample size. The multiple R capitalizes upon chance deviations. Thus, the R is probably an inflated value even though the shrinkage formula was used to correct it.

Of major importance is the fact that behavior status at the time the child was first nominated as displaying persistent aggressive-disruptive or socially approved behavior and the low aggression trait index were significant correlates or predictors of achievement over this extended period of eight years. This implies that schools should be greatly concerned about children who are persistently aggressive and/or disruptive in the classroom. Their behavior, whatever it causes, apparently has long range negative effects on learning.

The two achievement level scores for reading and arithmetic were also good long-range predictors. Reading achievement was particularly well predicted by the early reading achievement score. The social adjustment score obtained three years before the criteria was also an excellent predictor of all four achievement scores. Finally the education levels of the parents were significant predictors in several instances.

Previous reports of the Eau Claire County Youth Study have shown a strong link of the child's anti-social school behavior with frustrating home conditions. These home or family conditions include lack of parental skill in discipline techniques, ineffective affectional relationships between the child and his family, lack of family cohesion, low educational and occupational levels for the parents, and poor communication between the parents. These conditions clearly imply that the child's anti-social behavior has roots and manifestations outside the classroom.

As suggested in the introduction to this paper, the teacher's task is two-fold. The first is to carry on effective instruction and maintain a productive classroom climate in spite of the disruptive behavior of the aggressive-disruptive child. Secondly, she has to find ways to help the aggressive-disruptive child. If school social workers or psychologists are available this help might be focused on the child's home and family, a source of his frustrations and adverse behavior models. Community agencies such as the psychological clinics or welfare agencies might also help.

The results of this research indicate that teachers can make reliable assessments of children's aggressive and disruptive behavior and that these behaviors are predictive of long range academic achievement. Thus, as one facet of a comprehensive program, it seems reasonable to attempt early correction efforts on the aggressive and disruptive behaviors. It might also be advantageous to apply behavior modification techniques to the problem child in the classroom.

Three new texts provide excellent guidance for the teacher who wishes to employ behavior modification approaches to children with behavior problems. Meacham and Wiesen (1969) set forth exact procedures for what they call precision teaching. Valett (1969) developed a programmed text which affords training in behavior modification techniques. Bradfield (1970) edited a series of readings which focus on different aspects of behavior modification. All of these techniques are based on Skinner's operant conditioning model (1968). In essence they involve the following: (1) relatively precise specification of the behavioral manifestations of the problem, (2) identification of alternative desirable behaviors, (3) arrangements for prompt reinforcement of the desirable behaviors, and (4)

planned disregard (extinction) of the undesirable behavior. A large amount of recent research, much of it reported in the Journal of Applied Behavior Analysis, attests to the efficacy of behavior modification techniques in alleviating problem behavior.

Behavior therapy should be undertaken early before the maladaptive behavior becomes persistent and pervasive in its effects. The checklist of behavior problems can serve to identify specific types of aggressive behavior on which therapy should be focused. Remedial instruction programs will also be appropriate at anytime, but most likely would be attempted only when the child's academic deficiencies are substantial (Feldhusen, Thurston, and Benning, 1970). This is regrettable for the findings of this research (Feldhusen, Thurston, and Benning, 1967) indicate that learning deficits are discernible long before this time. Early remedy is more likely to be successful. If successful, such treatment would remove some of the many difficulties besetting the aggressive-disruptive child.

Conclusions

Significant predictions of academic achievement in the areas of reading, social studies, science, and mathematics can be made over an eight year period. Classroom behavior as aggressive-disruptive or socially approved, scores on a checklist of 18 aggressive behavior problems, IQ, sex, achievement in reading and arithmetic, the parents' education levels and teachers' ratings of the social adjustment of the child were significant predictors. Behavior modification techniques and remedial instruction were suggested as having potential for alleviating these children's problems.

Attention might also be directed to the child's home situation since earlier research of the Eau Claire County Youth Study indicated that the aggressive-disruptive children were beset by severe frustrations and problems within his family.

References

1. Bandura, A. and Walters, R.H. Adolescent Aggression. New York: Ronald Press, 1959.
2. Bradfield, R.H. (Ed.) Behavior Modification. San Rafael, California: Dimensions Publishing Company, 1970.
3. Draper, N.R. and Smith, H. Applied Regression Analysis. New York: John Witey, 1966.
4. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. "Sentence Completion Responses and Classroom Social Behavior", Personnel and Guidance Journal. October, 1966.
5. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. "Classroom Behavior, Intelligence, and Achievement", Journal of Experimental Education, 36, No. 2, Winter 1967, p. 83-87.
6. Feldhusen, J.F., Thurston, J.R., and Benning, J.J. "Longitudinal Analyses of Classroom Behavior and School Achievement", Journal of Experimental Education, 38, No. 4, Summer 1970, p. 4-10.
7. Flint Youth Study. Program on Children, Youth, and Family. Institute for Social Research, University of Michigan, 1959.
8. Glueck, Eleanor and Glueck, S. Predicting Delinquency and Crime. Cambridge: Howard University Press, 1959.
9. Guilford, J.P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1965.
10. Meacham, M.L. and Wiesen, A.E. Changing Classroom Behavior. Scranton, Pennsylvania: International Textbook Company, 1969.

11. Miller, N.E. and Bugelski, R. "Minor Studies in Aggression: II the Influence of Frustrations Imposed by the In-Group on Attitudes Expressed Toward Out-Group", Journal of Psychology, 1948, 25, p. 437-442.

12. Rosenzweig, S. "The Rosenzweig Picture-Frustration Study, Children's Form", Reprinted from Projective Techniques With Children, edited by A.I. Robin and M.R. Haworth, New York: Grime and Stratton, 1960, p. 151.

13. Skinner, B.F. The Technology of Teaching. New York: Appleton-Century-Crafts, 1968.

14. Thurston, J.R., Feldhusen, J.F., and Benning, J.J. Classroom Behavior: Background Factors and Psycho-Social Correlates, 1964.

15. Valett, R.E. Modifying Children's Behavior. Palo Alto: Fearon, 1969.

Table 1

Total Set of Independent Variables From
Which Significant Predictors
Were Derived

1. Sex

2. Age

3. Behavior

4. IQ

5. Kvaraceus Delinquency Proneness Scale
   - Total Score
   - Area 1 - School
   - Area 2 - Failure, fear
   - Area 3 - Peer relations
   - Area 4 - Occupation
   - Area 5 - Personal preferences
   - Area 6 - Family, adults

6. High Aggressive Traits - When first identified (Phase I)

7. Low Aggressive Traits - When first identified (Phase II)

8. Situation Exercises
   - 1 Reactions to being accused of cheating
   - 2 Reactions to being scolded for unavoidable failure
   - 3 Reactions to a social rebuff
   - 4 Reactions to thwarted assertions of independence

9. Reading Achievement Level

10. Arithmetic Achievement Level

11. High Aggressive Traits - Phase III

12. Low Aggressive Traits - Phase III

13. Social Adjustment - Phase III

14. Mother's Education Level

15. Father's Education Level

16. Interviewer Ratings of
    - Parents' Communication
    - Father's Approval of Child
    - Mother's Method of Discipline

Table 2

Description of Samples for
Predicting Academic Achievement

Characteristic		Nominees N=468	Intensives N=175
Grade	3	163	91
	6	305	84
Sex	Males (1)	235	87
	Females (0)	233	88
Approved (1)		330	95
Disapproved (2)		138	80
Location -	Rural (1)	242	79
	Urban (2)	226	96

Table 3

Significant Predictors
Predicting Percentile Achievement

Variable	Correlation with Y							
	Reading		Soc. Stud.		Science		Math	
	Nom.	Int.	Nom.	Int.	Nom.	Int.	Nom.	Int.
1. Sex	.13	.21**	-.01**	.09	-.25**	-.16**	-.20**	-.07**
2. Behavior	-.40**	-.46	-.36	-.42	-.29**	-.43	-.30	-.40
3. IQ	.69**	.59**	.65**	.41	.61**	.33	.65**	.46**
4. KD Adjusted Total Score	*	-.23	*	-.21**	*	-.29**	*	-.37
5. Low Aggressive Traits (Phase I)	-.37	-.41	-.32**	-.38	-.22	-.36	-.25	-.37
6. Situation Exercise #2	*	-.10	*	-.08	*	-.16**	*	-.06
7. Age	.02	-.08	.09**	.04	.01	-.02	-.04	.01
8. KD Subscore Area 1 (School)	*	-.25**	*	-.18	*	-.30	*	-.29
9. KD Subscore Area 4 (Occupation, Future)	*	-.33	*	-.32	*	-.09	*	-.25**
10. Reading Score	*	.64**	*	.48**	*	.34	*	.44
11. Arithmetic Score	*	.50	*	.41	*	.42**	*	.52**
12. Low Aggressive Traits (Phase III)	-.20	-.23	-.22	-.18	-.09	-.10**	-.23**	-.23
13. Social Adjustment (Phase III)	.52**	.56**	.54**	.50**	.38**	.43**	.45**	.48**
14. Parent's Communication	*	.20	*	.27**	*	.03	*	.09
15. Father's Approval of Child	*	.20	*	.16	*	.18	*	.25**
16. Education of Father	*	.25	*	.31**	*	.17	*	.15
17. Education of Mother	*	.27**	*	.25	*	.14	*	.18

* These scores were not available for nominees.

** These variables were in the optimum set for this sample and this criterion.

Table 4

Regression Analysis
Predicting Percentile Achievement Scores

Criterion Variable	Intensives					Nominees				
	R	Mean Y	St. Error of Est.	N	Opt. Set	R	Mean Y	St. Error of Est.	N	Opt. Set
Reading 11	.77	56.46	18.87	175	1 3 8 10 13 17	.72	61.92	20.28	458	2 3 13
Social Studies 12	.68	56.37	22.18	175	4 10 13 14 16	.71	60.93	21.56	458	1 3 5 7 13
Science 13	.66	55.29	22.53	175	1 4 6 11 12 13	.69	58.41	20.81	458	1 2 3 13
Math 14	.70	58.63	20.80	175	1 3 9 11 13 15	.72	62.22	19.73	460	1 3 12 13